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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,201	10/31/2003	Mark F. Ellis	58836US003	9990
32692 7590 05/17/2007 3M INNOVATIVE PROPERTIES COMPANY PO BOX 33427 ST. PAUL, MN 55133-3427			EXAMINER SELLMAN, CACHET I	
			ART UNIT 1762	PAPER NUMBER
			NOTIFICATION DATE 05/17/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/698,201	<b>Applicant(s)</b> ELLIS ET AL.	
	<b>Examiner</b> Cachet I. Sellman	<b>Art Unit</b> 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-20 is/are pending in the application.
- 4a) Of the above claim(s) 16-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-15 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Acknowledgement is made of the amendment filed by the applicant on 6/13/2006, in which claims 1, 4-5, 7, and 14 were amended, claim 11 was cancelled and claim 20 was added. Claims 1-10 and 12-20 are currently pending in U.S. Application Serial No.10/698,201.

### ***Response to Arguments***

1. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection. The applicant has amended claim 1 to include the limitation of using less than 20% by weight of a solvent, support for this limitation is found on page 12, lines 22-32 of the specification dated 10/31/2003.
2. Applicant's arguments see page 6, filed 06/13/2006, with respect to claim 3 have been fully considered and are persuasive. The objection of claim 3 has been withdrawn. The applicant points out that the limitation of the viscosity in claim 1 is for the partially polymerized mixture whereas the viscosity limitation of claim 3 is directed toward the radiation-curable precursor.
3. The objection of claim 4 in the previous office action has been withdrawn due to the applicant's amendment to include a period at the end of the claim.
4. The 35 USC 112 rejection of claim 1 in paragraph 5 of the previous office action is withdrawn due to the applicant's amendment to the claim to provide a boundary to the amount of solvent in the mixture defining the "essentially solvent free."

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 4-6, 8, 12-15 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Williams et al. (US 5741542).

Williams et al. discloses a process of making a thermal free- radical adhesive. The process comprises forming a mixture comprising one or more radically polymerizable monomers with one ethylenically unsaturated group (abstract, col. 5, lines 43-col 6, line 51) and at least one free-radical polymerization initiator (col. 7, lines 4-48) where the solvent is less than 20 weight percent of the mixture (col. 18, lines 15-23), the mixture is then partially polymerized which has a Brooksfeld viscosity of 1500 cps with about 50 % conversion (col. 9, lines 10-47), a free radical initiator is added to the mixture (col. 18, lines 26-27), the precursor is applied to a substrate (Example 1) and then subjected to irradiation (col. 10, lines 57-67) as required by **claim 1**.

The free radical polymerization initiators are thermally activatable (col. 7, lines 4-5) as required by **claim 4**. The initiator can be an organic peroxide, or an azo containing

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compound (col. 7, lines 4-48) as required by **claim 5**. Williams et al. teaches using free radical polymerization initiators within the range of 0.0005- 0.5 wt% with respect to the mass of the monomer (col. 7, lines 42-48) as required by **claim 6**. The initiator can be added in an amount within the range of 0.25-10wt% of the mass of the radiation curable precursor (Example 3) as required by **claim 8**. The mixture can have blowing agents (col. 8, lines 13-16) as required by **claim 12**. Williams et al. teaches converting at least 90% of the precursor as required by **claim 13**. The mixture can be applied to paper, non-woven, or metal substrates (col. 8, lines 38-47) as required by **claim 14**. The mixture can be coated onto the substrate (col. 8, lines 48-52) as required by **claim 15**. The mixture is solvent free meeting the limitation of **claims 20**.

7. Claims 1, 7-8, 13 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Graichen et al. (EP 1375617 A1).

Graichen et al. discloses a process for preparing a pressure sensitive adhesive which comprises the steps of providing a solvent free mixture of one or more free radically polymerizable monomer having one ethylenically unsaturated group and at least one free radical photoinitiator (abstract), partially polymerizing the mixture to provide a mixture having a viscosity of 300-1500 mPa\*s and a degree of conversion of 30-80% (abstract and 0090), adding one or more initiators to the mixture [0079], the mixture is then applied to the substrate [0090], then it is subjected to actinic irradiation [0091] in a non inert atmosphere as required by **claim 1**. The photo initiators can be type I or type II [0080-0083] in an amount of 0.5-10 wt % with respect to the mass of the precursor as required by **claims 7 and 8**. The precursor has at least 90% of the monomer converted

to a polymer [0087] as required by **claim 13**. The mixture is applied by printing as required by **claim 15**.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. or Graichen et al. as applied to claim 1 above.

The teachings of Williams et al. and Graichen et al. as applied to claim 1 are as stated above.

Both Williams et al. and Graichen et al. are silent as to the polydispersity values. It is the Examiner's position that the polydispersity values of Williams et al. and Graichen et al. would fall within the claimed range, or overlap the claimed range, since the process of Williams et al. and Graichen et al. and the instant invention use similar materials and similar process steps.

10. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ellis (US 5637646).

Ellis discloses a method of preparing a pressure-sensitive adhesive comprising the steps of: (i) providing an essentially solvent-free mixture, less than 20 % of solvent based on total weight of mixture (col. 11, lines 67) comprising free radically polymerizable monomers and at least one free-radical polymerization initiator; (ii)

partially polymerizing the mixture to provide a partially polymerized mixture having a polymer content of 30-80% (col. 17, line 52 to col. 18, line 10); (iii) adding additional initiator to the partially polymerized mixture (col. 18, lines 37-38); (iv) applying the mixture to a substrate (col. 19, lines 25-28); and (v) further polymerizing by subjecting the coated precursor to actinic irradiation to provide said PSA (col. 19, lines 30-33).

Ellis does not specifically state that a degree of conversion of monomers to polymer is between 30-60 wt % with respect to the initial mass of the monomers prior to polymerization. However, Ellis teaches that polymerization is stopped prior to full 100% conversion, and that at the time of stopping polymerization the polymer content is typically about 30-80 wt % based on the total weight of monomer and polymer (col. 17, lines 46-51 and col. 18, lines 9-10). It is the Examiner's position that the extent of monomer conversion in Ellis' process overlaps the claimed range of monomer conversion. Overlapping ranges are *prima facie* evidence of obviousness. It would have been obvious to one having ordinary skill in the art to have selected the portion of Ellis' monomer conversion amount range that corresponds to the claimed range. *In re Malagari*, 184 USPQ 549 (CCPA 1974). Further, it is the Examiner's position that for this reason, and because Ellis uses similar materials and process steps, Ellis' Brookfield viscosity would similarly fall within the claimed range.

Ellis does not state that the UV curing occurs in an inert atmosphere (col. 19, lines 30-52), therefore it would have been obvious to one skilled in the art to have performed the UV curing in a non-inert atmosphere for economic and efficiency reasons.

As to **claims 2 and 4**, Ellis teaches that the partial polymerization is performed under adiabatic conditions, and that the free-radical polymerization initiators are thermally activatable initiators.

As to **claim 5**, Ellis teaches the claimed free-radical polymerization initiators in col. 12, lines 28-44. As to **claim 6**, Ellis teaches that the amount of free-radical polymerization initiator is within the range of 0.0005-0.5 wt % (col. 13, lines 11-13). As to **claims 7-8**, Ellis teaches that "Different, or additional, initiators may be necessary" (col. 16, lines 8).

As to **claims 9-10**, Ellis is silent with regard to the polydispersity values. It is the Examiner's position that the polydispersity values of Ellis would fall within the claimed range, or overlap the claimed range, since the process of Ellis and the instant invention use similar materials and similar process steps.

As to **claims 14-15**, Ellis teaches coating on a polymeric substrate.

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cachet I. Sellman whose telephone number is 571-272-0691. The examiner can normally be reached on Monday through Friday, 7:00 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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